

Eastern North Slope Dolly Varden genetic stock identification and stock assessment.

Abstract: This report summarizes work conducted in 2003, part of multiple year study of Dolly Varden *Salvelinus malma* in eastern Alaska drainages of the Beaufort Sea, designed to characterize population structure and develop stock assessment techniques. Six replicate aerial surveys of the overwintering aggregation in a 28 km index area of the Ivishak River were conducted to estimate variability in counts as a means of evaluating the efficacy of this method. Five counts were conducted under good or excellent conditions. Counts were very similar and ranged from 2,252 to 2,948 (CV=0.05). Abundance and size composition of Dolly Varden of the overwintering aggregation for the same section of the Ivishak River were estimated using mark-recapture techniques. Estimated abundance of Dolly Varden >220 mm FL in 2003 was 9,259 fish (SE=1,156). This estimate was substantially smaller than estimates obtained in 2002 (21,639) and 2001 (49,523). Fish ranged in size from 220-705 mm FL and the length frequency distribution was distinctly bimodal. Twenty-two non-spawning fish in the Anaktuvuk River and 18 spawning-condition fish in the Ivishak River were implanted with radio tags in September 2003 to document overwintering locations in 2004. Those fish will be located in April 2004 and results will be presented in the final project report. Thirty-seven discrete spawning locations were identified in the upper Ivishak River on September 14, 2003. Many of the locations were similar to areas documented in previous years. However, a large number of new locations were documented in areas upstream of the most upstream location previously identified. During September 2003, tissue samples from spawning adults or pre-smolt juveniles were added to the collections from the Ribdon, Anaktuvuk, and Saviukviak rivers as part of an effort to collect baseline mitochondrial DNA genetic markers for various North Slope populations. In addition, a mixed-stock sample of 500 non-spawning overwintering adults was collected from the Ivishak River during the mark-recapture abundance estimate. This mixed-stock sample will be used to compare against stock-specific samples for evaluating genetic stock identification feasibility. The results of the genetic studies will also be presented in the final project report.

Citation: Viavant, T. 2004. Eastern North Slope Dolly Varden genetic stock identification and stock assessment. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, 2003 Annual Report (Study No. 01-113). Alaska Department of Fish and Game, Division of Sport Fish, Fairbanks, Alaska.